

## PLANAR DIAPHRAGM LOUDSPEAKER AND RELATED METHODS

### ABSTRACT OF THE DISCLOSURE

A planar diaphragm loudspeaker for use in a suspended ceiling grid and related methods of manufacturing are provided. The loudspeaker includes a rectangular, planar diaphragm of polymer material sized to fill an opening of the ceiling grid. The front surface of the diaphragm defines a three-dimensional, textured pattern formed by a secondary operation, such as, etching, perforating, and adhesion of granular or fiber material. The diaphragm may include an outer region about the periphery of the diaphragm having a density of at least 5 pcf and an inner region circumscribed by the outer region, thereby providing sufficient structural stiffness to the outside perimeter of the diaphragm and eliminating the need of an outer frame. The density of the inner region is at or below about 3 pcf throughout the inner region. Also, a shroud may be secured to the diaphragm, in which the shroud and the diaphragm are securable in a first orientation for flush mounting or in a second orientation for tegular-drop mounting. The loudspeaker may also include a bracket rigidly attached to the diaphragm at two spaced locations in the outer region and extending across the inner region between the spaced locations.